

REMARKS

Claims 5-10 and 12 are now presented in the application. Claims 13-20 have been cancelled without prejudice or disclaimer. Claim 5 has been amended to recite that the moisture resistance improver is “poly(oxyethylene)octylphenyl ether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester”. Basis for the amendment to claim 5 can be found at paragraph [0018] of the published specification. The amendments to the claims do not introduce any new matter.

The amendments to the claims overcome the rejections of claims 5 and 13-20 under 35 USC 112, second paragraph.

It will be helpful to keep in mind, when considering the rejections of the claims, that the present invention is concerned with providing an interlayer film for a laminated glass and a laminated glass, which do not cause an increase in a haze value due to moisture absorption and have excellent moisture resistance. To achieve aims of the present invention, the interlayer film for a laminated glass of the invention contains a specific moisture resistance improver, i.e. poly(oxyethylene)octylphenyl ether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester, or poly(oxyethylene)laurylphenyl ether phosphate ester.

In an interlayer film for a laminated glass, the water content can assume two forms. Namely, one of the two forms is a water content, referred to as adsorbed water, which is contained in the form of being adsorbed on functional groups of resin components or additives contained in the interlayer film for a laminated glass, and the other form is a water content, referred to as “bulk water”, which is not adsorbed on these components and exists solely in the interlayer film for a laminated glass. If the content of the "bulk water" increases due to the moisture absorption of the interlayer film for a laminated glass, particles of "bulk water" are flocculated and its particle diameter becomes large. This causes visible light to scatter and this scattering may manifest itself in the form of an increase in a haze value. Also, foaming and the like may occur with a "bulk water" particle as a nucleus.

Containing poly(oxyethylene) octylphenyl ether phosphate ester, poly(oxyethylene) nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester,

makes it possible to inhibit the occurrence of flocculated bulk water. On the other hand, because these moisture resistance improvers have good affinity for the polyvinyl acetal resin or the plasticizer, phase separation does not occur.

Poly(oxyethylene)nonylphenyl ether phosphate ester is shown in Example of the specification. With using this phosphate ester compound, very small distance of whitening on moisture resistance test is shown (Table 1). This performance can also be shown when using poly(oxyethylene)octylphenyl ether phosphate ester and poly(oxyethylene)laurylphenyl ether phosphate ester.

To supplement this showing, applicant carried out tests to confirm the results of adding poly(oxyethylene)octylphenyl ether phosphate ester and poly(oxyethylene)laurylphenyl ether phosphate ester. Thus an interlayer film for a laminated glass and a laminated glass was prepared using the obtained interlayer film for a laminated glass by the same procedure as in Example 1 of the present application except for using poly(oxyethylene)octylphenyl ether phosphate ester and poly(oxyethylene)laurylphenyl ether phosphate ester as a moisture resistance improver. The laminate glass was subjected to evaluations of the moisture resistance test according to the methods described on paragraph [0065] of the published specification.

The results obtained are shown below:

<Results>

Distance of whitening

poly(oxyethylene)octylphenyl ether phosphate ester:

2.45 mm.

poly(oxyethylene)laurylphenyl ether phosphate ester:

2.40 mm.

Claims 5 and 12-18 were rejected under 35 USC 102(b) as being anticipated by US Patent 3,841,890 to Coaker et al. (hereinafter also referred to as “Coaker”). Coaker does not anticipate the claims as now amended.

Coaker suggests an interlayer that comprises polyvinyl butyral resin, blend of a phosphate plasticizer and a diester of an aliphatic dicarboxylic acid. Coaker suggests examples of the phosphate plasticizer in Column 2, line 27 to column 3, line 6. However Coaker only discloses common phosphate plasticizers. Coaker never discloses adding poly(oxyethylene) octylphenyl ether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester.

Claims 5 and 12-18 were rejected under 35 USC 102(e) as being anticipated by US Patent 7,238,427 to Ma. Ma does not anticipate the claims as now amended.

Ma suggests a fire resistant polymer sheet that comprises polyvinyl butyral resin, phosphate ester plasticizer and an adhesion control agent. Ma mentions examples of the phosphate ester plasticizer in Column 6, line 35 to column 7, line 6. However Ma only discloses common phosphate ester plasticizers. Ma never discloses adding poly(oxyethylene) octylphenyl ether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester.

Claims 5-10 and 12-20 were rejected under 35 USC 103(a) as being obvious over US Patent 6,673,456 to Kobata et al. (hereinafter also referred to as “Kobata”) in view of US Patent 3,841,890 to Coaker et al., US Patent 7,238,427 to Ma and US Patent 4,027,069 to Mont et al. The cited references do not render obvious the present claims as now amended.

Kobata suggests an interlayer comprising polyvinyl butyral resin, plasticizer, phosphate ester compound, acetylacetone and ITO particles, and the glass laminate with the interlayer(Example I). However Kobata never discloses to adding poly(oxyethylene)octylphenyl ether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester.

As mentioned above Coaker and Ma also fail to disclose adding poly(oxyethylene) octylphenylether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester as now recited in the claims.

Mont suggests an interlayer that comprises polyvinyl butyral resin, a plasticizer and a buffer. Mont mentions triethyl phosphate as a buffer. However, Mont also fails to disclose adding poly(oxyethylene)octylphenyl ether phosphate ester, poly(oxyethylene)nonylphenyl ether phosphate ester or poly(oxyethylene)laurylphenyl ether phosphate ester.

In view of the above, consideration and allowance are respectfully solicited.

In the event the Examiner believes an interview might serve in any way to advance the prosecution of this application, the undersigned is available at the telephone number noted below.

The Office is authorized to charge any necessary fees to Deposit Account No. 22-0185, under Order No. 21581-00467-US from which the undersigned is authorized to draw.

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Respectfully submitted,

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